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09/430,225	10/29/1999	LUCA CARDELLI	1018.029US1	6952

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EXAMINER

DAY, HERNG DER

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 05/05/2003 //

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/430,225	Applicant(s) CARDELLI ET AL.	
	Examiner Hereng-der Day	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 27 January 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This communication is in response to Applicants' Reply (paper # 9) to Office Action dated October 23, 2002 (paper # 8), mailed January 27, 2003.

1-1. Claims 1-19 have been examined and claims 1-19 have been rejected.

1-2. The indicated allowability of claims 1-19 is withdrawn in view of the newly discovered reference(s) to Applicants' assertions as summarized in Applicants' arguments section 15 below.

Rejections based on the newly cited reference(s) follow.

Drawings

2. The proposed drawing corrections to Figs. 1, 3, and 4, filed January 27, 2003, have been approved. The Patent and Trademark Office no longer makes drawing changes. See 1017

O.G. 4. It is Applicants' responsibility to ensure that the drawings are corrected. Corrections must be made in accordance with the instructions below.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

2-1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

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2-2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.185(a). Failure to take corrective action within the set (or extended) period will result in **ABANDONMENT** of the application.

Specification

3. The amendment filed January 27, 2003, is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material, which is not supported by the original disclosure, has been sampled in the corresponding rejections under 35 U.S.C. 112, first paragraph, as detailed in section 6 below.

Applicants are required to cancel the new matter in the reply to this Office Action or to show the support in the original specification to possibly overcome this objection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

First, many operations and functions are used but not defined and disclosed in the specification. For example, *Head* in line 8 of page 37, and *Next* in line 3 of page 39. The Applicants assert, in page 23 of paper # 9, that the function *Head* is intended to refer to an emulated machine and the operation *Next* is well known, however, without providing any definition of the function or procedure nor any supporting evidence in the original specification.

Next, many expressions disclosed in the specification are either incomplete or incorrect. For example, $(\square K)$ in line 7 of page 28, Corollaries (2) in line 29 of page 29, $Check(P, A|B)$ in line 5 of page 34, and $Check(P, A)$ in line 8 of page 35. The Applicants assert, in page 23 of paper # 9, that "The function "Check" is described, for example, at page 33, lines 7-8", however, without completing or correcting any above-mentioned expressions. Also note, the P'' as described in the Fact in line 11 of page 19 is not defined.

With undefined functions and procedures as well as incomplete or incorrect expressions, claims 1-19 eventually contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

6. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, the insertions of new symbols, as described in page 23 of paper # 9, are not supported by the original specification because both Sequent and Satisfaction relation are represented by a space “ ” in the original specification. In many situations, the original specification does not provide enough information such that one skilled in the art knows where and which symbol should be inserted without undue experiments.

Next, the symbol substitutions for certain occurrence of other symbols, as described in page 23 of paper # 9, are not supported by the original specification neither. For example, the symbol @ used in the original specification has been defined with different meaning at different place, as admitted in page 23 of paper # 9, is another example of enablement issue.

Without support by the original specification, the inserting and substituting symbols constitute new matter and cause the rejections under 35 U.S.C. 112, first paragraph.

Then, as described in page 23, “iff” within the table is read as “if” in the paragraph following the table. The Applicants assert, in page 24 of paper # 9, that the term *iff* is well known in the art to mean *if and only if*. Therefore, for example, those bullets interpreted in the paragraph following the derived logical connectives table in page 23 are not consistent with the table.

With inconsistent interpretations between table and bullets, claims 1-19 eventually contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

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7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 9-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8-1. Claim 9 recites the limitation “the process” in lines 4-7 of the claim. There is insufficient antecedent basis for this limitation in the claim because the limitation “a process” appeared respectively in lines 1-2 and line 3 of the claim. For the purpose of claim examination, the Examiner will presume that “the process” as described in claim 9 refers to the “process” in line 3 of the claim.

8-2. Claim 13 recites the limitation “the process” in lines 5-13 of the claim. There is insufficient antecedent basis for this limitation in the claim because the limitation “a process” appeared respectively in lines 1-2 and line 3 of the claim. For the purpose of claim examination, the Examiner will presume that “the process” as described in claim 13 refers to the “process” in line 3 of the claim.

8-3. Claims 10-12 are rejected as being dependent on a rejected claim.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1-19 are rejected under 35 U.S.C. 101 because the claimed invention is not concrete, useful, and tangible.

The Applicants assert, in page 28 of paper # 9, “ambient calculus-based modal logics, and more specifically, model checking for ambient calculus-based modal logics have practical application”. However, the Examiner respectfully submits that Applicants have not claimed a practical application.

10-1. An invention, which is eligible for patenting under 35 U.S.C. § 101, is in the “useful arts” when it is a machine, manufacture, process or composition of matter, which produces a concrete, tangible, and useful result. *The fundamental test for patent eligibility is thus to determine whether the claimed invention produces a “useful, concrete and tangible result.”* The test for practical application as applied by the examiner involves the determination of the following factors:

(1) “Useful” - The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished. Applying utility case law the examiner will note that:

(a) the utility need not be expressly recited in the claims, rather it may be inferred.

(b) if the utility is not asserted in the written description, then it must be well established.

Furthermore, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(2) “Tangible” - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. § 101. In *Warmerdam* the abstract idea of a data structure became capable of producing a useful result when it was fixed in a tangible medium which enabled its functionality to be realized.

(3) “Concrete” - Another consideration is whether the invention produces a “concrete” result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

10-2. The Examiner respectfully submits, under current PTO practice, that the claimed invention does not recite a concrete, useful, and tangible result.

10-3. The Examiner acknowledges that even though the claims are presently considered non-statutory they are additionally rejected below over the prior art. The Examiner assumes the Applicants will amend the claims to overcome the 101 rejections and thus make the claims statutory.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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12. Claims 1-4, 6-7, 9-10, 12, 14-16, and 18-19 are rejected under 35 U.S.C. 102(a) as being anticipated by Stanski et al., "Expressing Dynamics of Mobile Agent Systems Using Ambient Calculus", Proceedings of Ninth International Workshop on Database and Expert Systems Applications, August 1998, pages 434-439.

12-1. Regarding claim 1, Stanski et al. disclose a computer-implemented method operable on a process, the method comprising:

analyzing the process (agent, section 3.1, paragraph 2) against a formula (server policy, section 3.1, paragraph 2) using a predetermined modal logic based on ambient calculus to determine whether the process satisfies the formula; and,

outputting whether the process satisfies the formula (decide, section 3.1, paragraph 2).

12-2. Regarding claim 2, Stanski et al. further disclose analyzing the process comprises analyzing the process in a recursive manner (decide a version among N versions, section 3.1, paragraph 2).

12-3. Regarding claim 3, Stanski et al. further disclose analyzing the process comprises normalizing the process to determine whether the process comprises only a single element (an agent, section 3.1, paragraph 2).

12-4. Regarding claim 4, Stanski et al. further disclose analyzing the process comprises partitioning the process to determine whether each component of the process satisfies the formula (N versions, section 3.1, paragraph 2).

12-5. Regarding claim 6, Stanski et al. further disclose analyzing the process comprises analyzing each sublocation of the process against the formula (ambient nesting, section 2.3, paragraph 4; therefore, nested locations).

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12-6. Regarding claim 7, Stanski et al. further disclose analyzing the process comprises analyzing a spatial reach of the process against the formula (moves, section 2.3, paragraph 3).

12-7. Claim 9 is a machine-readable medium claim includes same method limitations as in claim 1 and is anticipated using the same analysis of claim 1.

12-8. Claim 10 is a machine-readable medium claim includes same method limitations as in claims 2-3 and is anticipated using the same analysis of claims 2-3.

12-9. Claim 12 is a machine-readable medium claim includes same method limitations as in claims 6-7 and is anticipated using the same analysis of claims 6-7.

12-10. Claim 14 is a system claim includes same method limitations as in claims 1-2 and is anticipated using the same analysis of claims 1-2.

12-11. Claims 15-16 and 18-19 are system claims include same method limitations as in claims 3-4 and 6-7 and are anticipated using the same analysis of claims 3-4 and 6-7.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 5, 8, 11, 13, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanski et al., "Expressing Dynamics of Mobile Agent Systems Using Ambient Calculus", Proceedings of Ninth International Workshop on Database and Expert Systems Applications, August 1998, pages 434-439, in view of Applicants' disclosure of "a unification algorithm".

14-1. Regarding claim 5, Stanski et al. fail to expressly disclose analyzing the process comprises determining a plurality of names of the process, and verifying that a name exists for the formula that is unequal to any of the plurality of names.

Applicants disclose, “a unification algorithm, as known within the art, can be used to effectuate the check”, as described in page 34 of the original specification.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Stanski et al. to incorporate the teachings of Applicants to obtain the invention as specified in claim 5 because a well known unification algorithm saves software developing cost.

14-2. Regarding claim 8, Stanski et al. disclose a computer-implemented method comprising:

recursively analyzing a process (agent, section 3.1, paragraph 2) against a formula (server policy, section 3.1, paragraph 2) using a predetermined modal logic based on ambient calculus comprising:

normalizing the process to determine whether the process comprises only a single element (an agent, section 3.1, paragraph 2);

partitioning the process to determine whether each component of the process satisfies the formula (N versions, section 3.1, paragraph 2);

determining a plurality of names of the process, and verifying that a name exists for the formula that is unequal to any of the plurality of names;

analyzing each sublocation of the process against the formula (ambient nesting, section 2.3, paragraph 4; therefore, nested locations);

analyzing a spatial reach of the process against the formula (moves, section 2.3, paragraph 3); and,

outputting whether the process satisfies the formula (decide, section 3.1, paragraph 2).

However, Stanski et al. fail to expressly disclose determining a plurality of names of the process, and verifying that a name exists for the formula that is unequal to any of the plurality of names.

Applicants disclose, “a unification algorithm, as known within the art, can be used to effectuate the check”, as described in page 34 of the original specification.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Stanski et al. to incorporate the teachings of Applicants to obtain the invention as specified in claim 8 because a well known unification algorithm saves software developing cost.

14-3. Regarding claim 11, Stanski et al. further disclose the medium of claim 9, wherein recursively analyzing the process comprises:

partitioning the process to determine whether each component of the process satisfies the formula (N versions, section 3.1, paragraph 2);

However, Stanski et al. fail to expressly disclose determining a plurality of names of the process, and verifying that a name exists for the formula that is unequal to any of the plurality of names.

Applicants disclose, “a unification algorithm, as known within the art, can be used to effectuate the check”, as described in page 34 of the original specification.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Stanski et al. to incorporate the teachings of Applicants to obtain the invention as specified in claim 11 because a well known unification algorithm saves software developing cost.

14-4. Claim 13 is a machine-readable medium claim includes same method limitations as in claim 8 and is unpatentable using the same analysis of claim 8.

14-5. Claim 17 is a system claim includes same method limitations as in claim 5 and is unpatentable using the same analysis of claim 5.

Applicant's Arguments

15. Applicants argue the following:

(1) The table referred to in lines 11-12 of page 21 has twelve statements not ten statements as asserted by the Examiner (page 22 of paper # 9).

(2) The rejection of claims 1-19 under 35 U.S.C. 112, first paragraph is obviated by the amendment made to the specification including inserting and substituting symbols (pages 23-24 of paper # 9).

(3) The rejection of claims 1-19 under 35 U.S.C. 112, second paragraph is obviated because the limitations "process" and "formula" are defined and are not vague or indefinite. (pages 24-25 of paper # 9).

(4) The rejection of claims 1-13 under 35 U.S.C. 101 is obviated because model checking for ambient calculus-based modal logics has practical application (pages 25-29 of paper # 9).

Response to Arguments

16. Applicants' arguments have been fully considered. They are not persuasive.

16-1. Response to Applicants' argument (1). The table referred to in lines 11-12 of page 21 is the logical formulas table, which has only ten statements as shown in page 19. The Examiner cannot find any support to the Applicants' assertion of twelve statements.

16-2. Response to Applicants' argument (2). In view of Applicants' unpersuasive assertions, claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as detailed in sections 5 and 6 above.

16-3. Response to Applicants' argument (3). Claims 9-13 are rejected under 35 U.S.C. 112, second paragraph, because there is insufficient antecedent basis for the limitation "the process", as detailed in section 8 above.

16-4. Response to Applicants' argument (4). In view of Applicants' unpersuasive assertions, claims 1-19 are rejected under 35 U.S.C. 101, as detailed in section 10 above.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Herng-der Day whose telephone number is (703) 305-5269. The examiner can normally be reached on 9:00 - 17:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (703) 305-9704. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Herng-der Day
May 3, 2003


HUGH JONES Ph.D.
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